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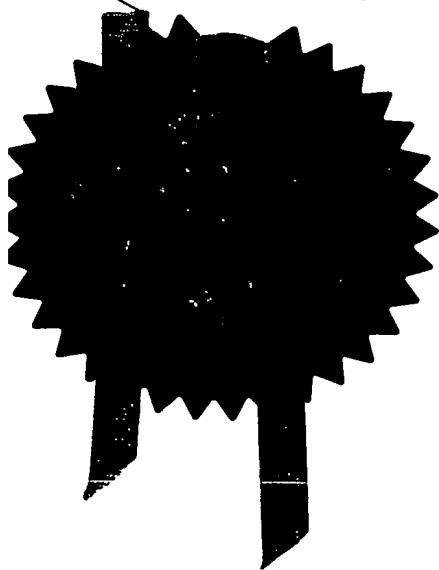
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1 / 77  
24 JAN 1977 591343-2 D0605  
PO1/7700 0.00-0201541.0

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The Patent Office

Cardiff Road  
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1. Your reference

D1064

2. Patent application number

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0201541.0

3. Full name, address and postcode of the or of each applicant (underline all surnames)

EBAC LIMITED  
ST HELEN TRADING ESTATE  
BISHOP AUCKLAND  
CO. DURHAM  
DL14 9AL

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

CB 8056749007

4. Title of the invention

BOTTLED LIQUID DISPENSERS

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

CERASKE & CO.  
PATENT LAW CHAMBERS  
15 QUEENS TERRACE  
STEPHESON  
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Patents ADP number (if you know it)

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Country

Priority application number  
(if you know it)Date of filing  
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing  
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8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

✓

a) any applicant named in part 3 is not an inventor, or  
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Patents Form 1/77

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Description 8

Claim(s) 3

Abstract 1

Drawing(s) 2 + 2 (4)

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Priority documents

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Statement of inventorship and right to grant of a patent (Patents Form 7/77)

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ONE

Request for substantive examination  
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Any other documents  
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I/We request the grant of a patent on the basis of this application.

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Date 23-1-02

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Ebac Limited

## BOTTLED LIQUID DISPENSERS

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### TECHNICAL FIELD OF THE INVENTION

This invention relates to apparatus for dispensing liquids such as drinking water supplied from a bottle.

### BACKGROUND

The majority of existing bottled liquid dispensers have a vertically elongate housing which contains a reservoir from which the liquid can be dispensed through a discharge outlet. An example of such a dispenser is described in EP 0 581 491 A. The housing is normally substantially rectangular in plan view and its top face is formed with a seating to support the bottle in an inverted position with its neck downwards. Thus, liquid may flow from the bottle into the reservoir under gravity. Since the bottle is highly visible to users they are reassured that the liquid is coming from a known, uncontaminated source, but this arrangement also has significant disadvantages.

To a large extent, the configuration of the bottle is determined by the quantity of liquid which it is designed to hold and the requirement for the

bottle to sit in a stable condition on the dispenser and maintain its shape during handling. Full bottles are very heavy. They are difficult to carry and lift onto the dispenser, especially by people of small physical stature, making the task of changing bottles a daunting one for many people and even presenting the risk of serious back injury.

It has been proposed to load the bottle into the lower part of the housing and pump the liquid into the reservoir, as described in **GB 2 268 925 A**, **US 4 852 621** and **US 5 833 096** for example. However, the bottles still remain very difficult to handle, as demonstrated by the necessity to include a cart or trolley for use in loading the bottle into the dispenser. There is probably also a significant psychological disadvantage in placing the bottle inside the dispenser rather than in a prominent position on top of the dispenser.

The present invention seeks to provide a new and inventive form of dispenser which facilitates the use of bottles which are much easier to load and handle whilst retaining the positive advantages of conventional top-loading dispensers.

#### SUMMARY OF THE INVENTION

The present invention provides a bottled liquid dispenser of the kind having a vertically elongate housing with a back, opposite sides and a front, the front of the housing having a dispensing recess and a bottle opening located below the dispensing recess to receive a bottle of liquid, the bottle opening containing a bottle-support platform and having a bottle connector at the top of the opening for conducting liquid from a bottle within the opening to a

reservoir contained within the housing, and at least one discharge outlet located at the top of the dispensing recess through which liquid is dispensed from the reservoir,

*characterised in that*

a bottle in use in the bottle opening is at least partly visible when viewed from the front and both sides of the dispenser.

In a preferred form of the dispenser the bottle opening has a pair of opposed side margins and the bottle-support platform is fixed relative to the housing and projects beyond said side margins at the front of the housing.

By providing a bottle opening of the kind specified the bottles remain visible in use and can easily be load onto the platform without requiring a cart or trolley.

The dispenser preferably includes pressurising means arranged to supply air or other gas to the bottle via the bottle connector to cause movement of liquid from the bottle to the reservoir.

By pressurising the bottle the dispenser can be used with bottles which, although they may contain a similar quantity of liquid to existing bottles, are relatively thin-walled and easier to handle than conventional bottles

The invention also provides a bottle for use with the dispenser, the bottle being moulded of a thin flexible material with a neck at its upper end, the neck being sealingly provided with a cap which includes a removable part and a fixed part which remains engaged with the neck in use and incorporates an inlet through which the bottle can be pressurised and an

outlet for liquid, the outlet being connected to a dip tube which projects into the bottle for removing liquid from a lower region of the bottle.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The following description and the accompanying drawings referred to therein are included by way of non-limiting example in order to illustrate how the invention may be put into practice. In the drawings:

Figure 1 is a general view of a bottled liquid dispenser in accordance with the invention;

Figure 2 is a plan view of the dispenser;

Figure 3 is a schematic diagram showing the internal components of the dispenser; and

Figure 4 is a side view of a bottle for use with the dispenser.

#### DETAILED DESCRIPTION OF THE DRAWINGS

Referring to Fig.s 1 and 2, the illustrated form of bottled liquid dispenser, which is often referred to as a water cooler, has a vertically-elongate housing 1. The housing has a rear panel 2 which is substantially planar or slightly convex in plan view, and a pair of side panels 3 and 4 which are slightly convex in plan view and converge slightly in a forward direction where they

join a substantially hemi-cylindrical front wall 5. The housing has a top 6 which may be aesthetically contoured as shown or substantially flat to act as a shelf for beverage-making items, marketing displays etc.

At the top of the front wall 5 there is a dispensing recess 8 within which hot and/or cold water may be dispensed into a cup or similar container by pressing one or more operating buttons 9a/b positioned immediately above the recess. Beneath the dispensing recess 8 the front wall contains an opening 10 for receiving a bottle of water 11. In the illustrated embodiment the height of the opening 10 is about three times its maximum transverse width. The top and bottom margins of the opening 10 are both substantially semi-circular, defined by upper and lower sections 13 and 14 of the front wall 5. The opposing side margins 15 and 16 of the display opening are substantially vertical and parallel, defined by the foremost edges of the curved side panels 3 and 4. The bottom of the opening 10 is formed by a fixed platform 18 with a substantially semi-circular front margin joined to the lower section 14 of the front wall 5. The rear wall 20 of the opening may be of any convenient shape, e.g. substantially planar, concave or hemi-cylindrical, provided it permits the bottle 11 to sit on the platform 18 without projecting beyond the front wall 5 by a significant amount. The top of the opening 10 is provided with a bottle connector 21 which can be retracted for changing the bottle.

The front of the display opening 10 may be open as shown. Alternatively however, the opening may be provided with a substantially hemi-cylindrical transparent door hinged to one of the side margins 15 or 16. The door may simply enclose the top of the opening in order to protect the bottle connector 21, or it may enclose the whole opening to provide a temperature-controlled

environment around the bottle.

The Internal components within the water cooler may be of known form, as shown in Fig. 3. An air pump 28 supplies pressurised air to the bottle connector 21 in order to pressurise the bottle 11. The bottle contains a dip tube 29 which conducts water from the lower part of the bottle into a chiller reservoir 30 which is provided with a cooling system 31. When a control valve 33 is opened by operation of button 9a the positive air pressure in the system causes cooled water to leave the reservoir through a draw tube 32, and after passing through the control valve 33 the cooled water is dispensed through a discharge outlet 34 at the top of the recess 8. A hot tank 36 may be provided with a heating element 37 to receive water from the dip tube 29 and similarly dispense hot water through a further control valve 39 operated by a second button 9b. Other known features can be included such as carbonation or oxygenation of the dispensed water, addition of fruit flavourings etc.

Fig. 4 shows a typical bottle 11 for use with the cooler. The bottle has a capacity of approximately 20 litres and is substantially more elongate than normal bottles of similar capacity so that it can be carried in one hand at arms length and is convenient to store. The bottle is moulded of PET or similar thin flexible plastics material and is intended for one-time usage to avoid the necessity for cleansing after use. Since it is pressurised in use the shape of the bottle is maintained as water is removed. The bottle has a generally cylindrical side wall 41 having a height of about twice its diameter, a circular bottom wall 42 and a part-conical top 43 leading upwardly into a short cylindrical neck 44. The side wall may be shaped in the house style of the product vendor, if desired. A separately-moulded carrying handle 45

is located about the neck 44, which is closed by a cap 46. The cap is formed in two (or more) parts, namely a fixed part 47 and a removable part 48. The fixed part of the cap 47 has a liquid outlet, and the dip tube 29 is secured to the fixed part to communicate with the fluid outlet. The fixed part remains permanently and sealingly secured to the bottle at all times. This part further incorporates an air inlet for connection to the pump 28. The removable part 48 is releasably and sealingly engagable with the fixed part 47, e.g. by means of screw threads, so that the bottle can be capped whenever it is not mounted in the dispenser.

To load the bottle into the dispenser the removable part of the cap is taken off and the bottle is lifted by means of its handle 45 and tilted at a small angle so that the bottom can be placed onto the projecting platform 18. The bottle is then allowed to tilt back to a vertical position under gravity and adjusted to an approximately central position on the platform if necessary. This process is achieved very rapidly and with little physical effort. The bottle connector 21 can then be sealingly engaged with the fixed part 47 of the cap to make the necessary air and water connections. It will also be appreciated from Fig. 1 that when the bottle is thus loaded into the cooler it remains highly visible to users when viewed from the front and from both sides of the cooler.

Apart from the advantages discussed above there are a number of additional advantages to the system described, which include the following:

- The water cooler has a low central of gravity compared with conventional coolers.
- Any leakages around the neck of the bottle result in loss of air rather than water so that there is less risk of spillages. Any air loss is replenished by

means of the air pump.

- Since the bottle does not have to be inverted any branding is always displayed the right way up.
- The material content of the empty bottle can be reduced to as little as 200g.
- Brand identity (bottle shape) can be maintained in conformity with smaller bottles.

It will be appreciated that the features disclosed herein may be present in any feasible combination. Whilst the above description lays emphasis on those areas which, in combination, are believed to be new, protection is claimed for any inventive combination of the features disclosed herein.

\* \* \* \* \*

**CLAIMS**

1. A bottled liquid dispenser of the kind having a vertically elongate housing with a back, opposite sides and a front, the front of the housing having a dispensing recess and a bottle opening located below the dispensing recess to receive a bottle of liquid, the bottle opening containing a bottle-support platform and having a bottle connector at the top of the opening for conducting liquid from a bottle within the opening to a reservoir contained within the housing, and at least one discharge outlet located at the top of the dispensing recess through which liquid is dispensed from the reservoir,

*characterised in that*

a bottle in use in the bottle opening is at least partly visible when viewed from the front and both sides of the dispenser.

2. A bottled liquid dispenser according to Claim 1, in which the bottle opening has a pair of opposed side margins and the bottle-support platform is fixed relative to the housing and projects beyond said side margins at the front of the housing.

3. A bottled liquid dispenser according to Claim 2, in which the front margin of the bottle-support platform is of arcuate shape.

4. A bottled liquid dispenser according to Claim 3, in which the front margin of the bottle-support platform is generally semi-circular.

5. A bottled liquid dispenser according to any preceding claim, in which the height of the bottle opening is at least twice its maximum width
6. A bottled liquid dispenser according to any preceding claim, in which the front wall of the housing is generally hemi-cylindrical.
7. A bottled liquid dispenser according to any preceding claim, which includes pressurising means arranged to supply air or other gas to the bottle via the bottle connector to cause movement of liquid from the bottle to the reservoir.
8. A bottled liquid dispenser according to any preceding claim in combination with a bottle having a neck at its upper end.
9. A bottled liquid dispenser according to Claim 8, in which the neck is sealingly provided with a cap which includes a removable part and a fixed part which remains engaged with the neck in use.
10. A bottled liquid dispenser according to Claim 9, in which the fixed part of the cap incorporates an inlet through which the bottle can be pressurised and an outlet for liquid, the outlet being connected to a dip tube which projects into the bottle for removing liquid from a lower region of the bottle.
11. A bottled liquid dispenser according to Claim 8, 9 or 10, in which the bottle is moulded of a thin flexible material.
12. A bottle for use with a dispenser according to any of Claims 1

to 11, the bottle being moulded of a thin flexible material with a neck at its upper end, the neck being sealingly provided with a cap which includes a removable part and a fixed part which remains engaged with the neck in use and incorporates an inlet through which the bottle can be pressurised and an outlet for liquid, the outlet being connected to a dip tube which projects into the bottle for removing liquid from a lower region of the bottle.

13. A bottled liquid dispenser according to Claim 12, in which the bottle is moulded of a thin flexible material.

14. A bottled liquid dispenser which is substantially as described with reference to the drawings.

15. A bottle which is substantially as described with reference to the drawings.

\* \* \* \* \*

**ABSTRACT****Bottom Loading Bottled Liquid Dispenser**

A water cooler has a vertically elongate housing 1 with a hemi-cylindrical front face 5 which defines a dispensing recess 8 and a vertically elongate display opening 10 located below the dispensing recess to receive a bottle of water 11. The bottle is supported on a fixed platform 18 which projects forward beyond the sides 15 and 16 of the opening for ease of loading. A bottle connector 21 in the opening supplies air to maintain a positive pressure in the bottle which causes removal of liquid through a dip tube supplied with the bottle.

[Figure 1]

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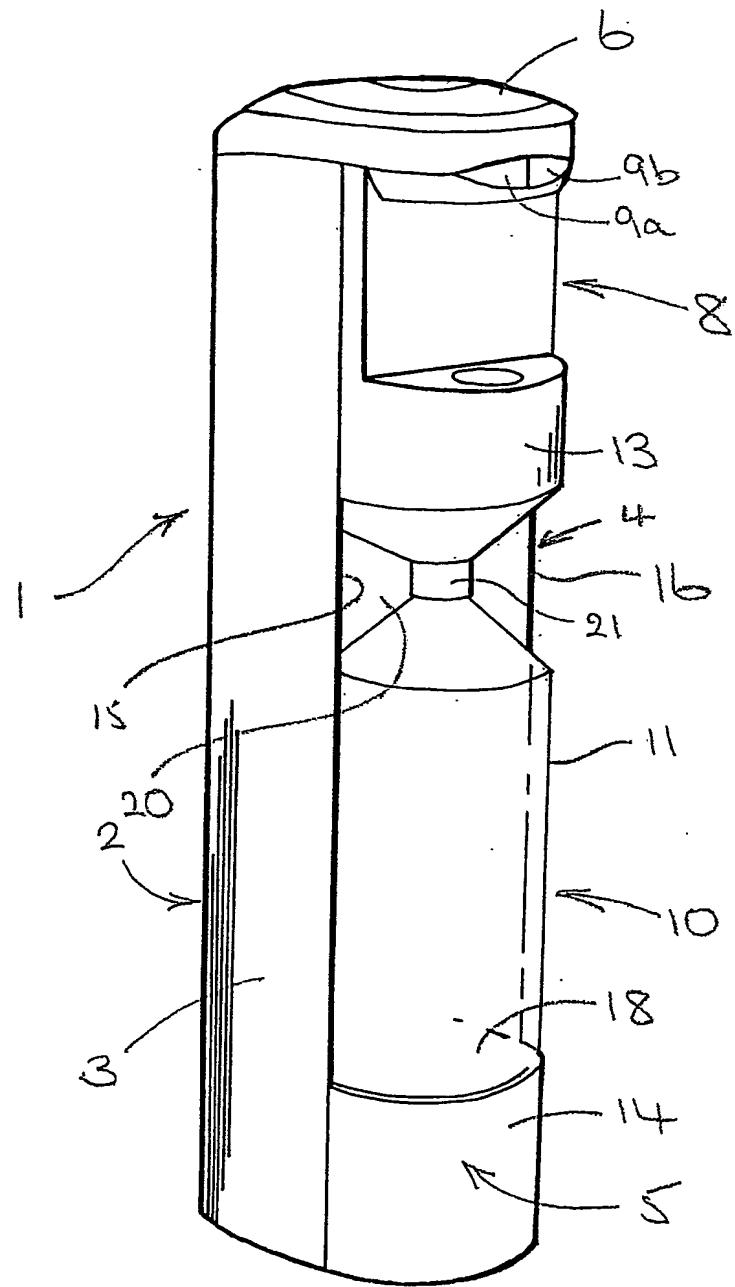


Fig 1

2/2

